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ABSTRACT

The behavior of mothers interacting with their preschoolers in a memory-relevant situation was examined. Ten 3-year-olds and their mothers were videotaped playing a game requiring memory for the location of hidden pictures. Frequency of nine categories of parental behavior was scored: naming, verbal orienting, physical orienting, physical description, functional description, questioning, instruction, verbal praise, and physical praise. The relationship between parental behaviors and the child's performance and study behaviors on a subsequent memory task was also investigated, and parents completed a questionnaire on ways they used to help their child remember. Analysis of the videotaped interactions indicated that instructions, questions, and physical orienting were the most frequent parental behaviors; however, significant correlations among physical and verbal orienting and physical and functional description suggested that behaviors designed to focus the child's attention were characteristic of some mothers. This finding was supported by questionnaire data, in which mothers reported that they encouraged looking, naming, pointing, and manipulation as mechanisms for increasing recall. No relationship was found between maternal behaviors in the game and recall or study behaviors on the memory task. (Author/MP)

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Parental Behaviors in a Memory Relevant Setting:

How Parents "Teach" Children to Remember

Elaine M. Justice & Denise D. Coley

The research I want to describe was designed to examine parental behaviors in a memory relevant setting that might dispose preschoolers to utilize nonverbal strategic behaviors. There is abundant evidence that preschool children do not use verbal mnemonic strategies, such as rehearsal or categorization, to increase future recall. Recent evidence, however, indicates that young children appear to adopt various nonverbal, potentially mnemonic, behaviors when asked to remember. For example, a series of studies by Baker-Ward (1980, under review) found that young children asked to remember a set of objects manipulated the to-be-remembered items significantly more than children asked to "look at" or "play with" the objects. In another study Short and Miller (1981) found that preschoolers adopted a strategy of "looking longer" at to-be-remembered objects. In a similar vein, a study I conducted (Justice, under review) found that 4-year-olds judged looking to be a more effective strategy than naming, rehearsal or categorization. Thus, it appears that preschool children utilize nonverbal behaviors in a strategic fashion.

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The current study was designed to examine the possible basis for preschoolers' reliance on nonverbal strategic behaviors. Several theorists including Brown (1975) and Stevenson and his colleagues (1978) have argued that memory strategies emerge in response to experiences and demands of the environment. Brown (1975) noted that preschoolers are generally not required to utilize verbal memory strategies. A finding by Lange (1979) supported this hypothesis. In this study parents were asked to help their preschoolers learn the names of 20 objects for a free recall test. This task provided an ideal setting for the parent to initiate formal instruction on the use of

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verbal rehearsal, grouping or elaboration to increase recall. Few parents, however, made any attempt to teach their preschoolers these strategies. Although parents reported encouraging memory for names, rules, explanations and stories, few overt efforts to teach memory strategies were apparent.

Although parents made little attempt to teach children verbal mnemonics, recent indications that preschoolers rely on nonverbal strategies suggest that parents may in some way communicate the appropriateness of nonverbal behaviors in memory relevant settings. I use the term "memory-relevant setting" to refer to a situation in which memory is an aspect or component, but not the focus of, the interaction. Memory "for its own sake" is not meaningful for preschoolers and, indeed, Lange found that parents encourage, but generally do not require, this type of memory performance from their young children. Thus, the current study focused on the behavior of mothers with preschool children in a "memory relevant setting". The relationship between parental behaviors in this setting and study behaviors of the child on a subsequent memory task was also investigated.

Interactions between 10 three-year-old preschoolers ($\bar{X}$ = 3 yrs, 6 mns) and their mothers were videotaped. The interactions centered around a simple card game using nine pairs of child's playing cards. The cards featured detailed, brightly colored, characters with the name of the character printed across the top. The game involved spreading the cards face down on a table and taking turns drawing two cards in order to match the pairs. Although this is a relatively common preschool activity, six of the ten mothers subsequently reported not having played this kind of game with their child before. Three of the other four children had played the game less than six times. The game provided a context in which memory for position was a

relevant factor, but memory per se was not the focus of the interaction. Standard instructions were given to the mothers who then taught the game to their children. Mothers were unaware of the specific interest in memory processes. Following the game the child was presented with ten unrelated pictures and asked to study them for recall. A one minute study period during which the child was alone in the room was also videotaped. Finally, mothers completed a questionnaire concerning the importance of memory for different kinds of information and what strategies they used to help their child remember.

Total game interactions lasted from 8 to 21 minutes. Analysis of the videotapes was based on the "turn", i.e. the time from when the first card of a pair was exposed until the time just prior to when the first card of the next pair was exposed. The first ten "turns" of each mother-child interaction were analyzed using categories established based on two pilot subjects. Interactions were scored independently by two individuals with reliabilities for the categories ranging from $r = +.77$ to $+.94$. The nine categories scored are shown in Table 1. They were: Instruction: directing the child to carry out some action relevant to the game; Questioning: requesting information concerning the game; Physical Orienting: drawing the child's attention to a specific card by holding up or pointing to it; Verbal Orienting: verbally drawing the child's attention to a specific card, e.g. There's Nellie Nurse; Naming: saying the printed character name, e.g. Nellie Nurse; Verbal Praise: verbally indicating approval, e.g. Good! or Nice Job!; Physical Description: naming an object pictured on a card, e.g. She has a thermometer; Physical Praise: a physical gesture

of approval, e.g. a hug or pat; and Functional Description: describing the use or activities of an object pictured on a card, e.g. She can take temperatures with it. The categories were non-exclusive in that one verbalization could be scored in more than one category. For example, "Where is Nellie Nurse" was scored as both Questioning and Naming.

The table shows the mean incidence of each behavior per turn over all children. As you can see, mothers averaged 3.5 instruction, 1.2 questions, 1.2 physical orientations, and so on, per turn. While not broken down on the table,of the instructions 87% focused on game rules while 13% were directly related to memory. Thus, there was relatively little attempt by the mothers to overtly instruct the preschoolers on how to remember the position of the cards. Rather, mothers were more concerned in getting the child to follow the rules of the game, particularly turn-taking. Nevertheless, several of the parental behaviors observed in the study appeared to direct the child's attention to the game materials. Physical and verbal orienting and physical and functional description all appeared designed to make the child focus on the stimulus pictures. Analysis of the relationship among these factors indicated positive correlations ($p < .01$) between verbal orienting and physical orienting, physical orienting and physical description, and physical and functional description. Further,the frequency of these categories was unrelated to the frequency of naming, questioning or instructions. These findings suggest that some parents utilize a variety of behaviors designed to focus the child's attention on specific aspects of the environment. This parental style may, in effect, communicate to the child that behaviors such as looking at, touching or describing the environment are appropriate in this type of setting.

The relationship between parental behaviors in this setting and the child's study behavior and recall in a subsequent memory task was also examined. Four types of study behavior were identified and scored from the videotapes. They were (a) naming the pictures, (b) pointing to the pictures, (c)manipulating the pictures, and (d) the proportion of the total time spent looking at the pictures. No relationship was found between any of the parental behaviors and the child's study behavior or performance on the memory task. Intercorrelations among the nine parental behaviors, child's age, recall performance, and the four study behaviors indicated that age correlated significantly with recall and pointing during study, while recall was related to pointing. Thus, although the nonverbal behavior of pointing to the pictures were related to performance on the recall task, there was not direct relationship between parental behaviors in the game and the child's study behaviors on the task. A number of explanations are available for this result. The tasks may have been too dissimilar to elicit the same types of strategies. Alternatively, the children's study behaviors may have been influenced by previous learning across a variety of memory-relevant situations and therefore not related to experience in the single setting examined in the study.

The results of the parental questionnaire are shown in Table 2. On the memory questionnaire memory for rules was judged as important or very important by all of the mothers (100%), supporting a finding by Lange (1979) that parents require memory for rules. Memory for explanations (90%), locations (80%), and objects (70%) was also viewed as important by most mothers. Memory for stories and poems was considered important by only

half of the mothers. Thus, memory skills were generally viewed as quite important. All of the mothers reported that they tried to help their child remember. The most popular method was to encourage the child to "look closely" at to-be-remembered materials, with 90% of the mothers reporting that they frequently used this method. The majority of the mothers also reported encouraging naming (80%), repetition (80%), pointing (70%), and manipulation (70%) in memory situations. Grouping objects (50%) and making up stories (49%) were used by fewer mothers.

The results of this study indicate that mothers use a variety of nonverbal behaviors to direct their childrens' attention to memory relevant aspects of the environment. In memory settings they physically and verbally orient the child to the relevant stimuli. Further, they report encouraging behaviors such as looking, pointing, and manipulation. While simple verbal behavior such as naming and repetition were also reported to be encouraged, more sophisticated verbal strategies based on semantic categorization or integration into stories were encouraged by fewer mothers. Although no direct relationship was found between parental behavior and study behavior, it might by hypothesized that,over a series of interactions,adult emphasis on these behaviors might lead the child to adopt them in similar situations. The frequent use by mothers of physical and verbal orienting and description suggest that children may have been "taught" in multiple interactions in a variety of contexts that such behaviors are useful. The challenge now is to first, specify more clearly the type of environmental demands for memory placed on young children and secondly, to identify the developmental process that allows the child to separate first nonverbal, and later verbal, behaviors

from their original context and use them in multiple, appropriate memory situations.

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Table 1

Categories Scored for Mother-Child Interactions

in a Memory Relevant Setting

Verbal Category	Mean Occurrences Per Turn
Instruction: directing the child to carry out some action relevant to the game	3.5
Question: requesting information concerning the game	1.2
Physical Orientation: holding up or pointing to a specific card	1.2
Verbal Orientation: verbally drawing the child's attention to a specific card	.7
Naming: saying the printed character name	.5
Verbal Praise: verbal indication of approval	.5
Physical Description: naming an object pictured on a card	.4
Physical Praise: a physical gesture of approval	.1
Functional Description: describing the use or activities of an object pictured on a card	.04

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Table 2

Parental Questionnaire Data Concerning Importance of Memory and Strategies Used to Help Children Remember

Importance of Memory for:	% of Mothers Judging Important or Very Important
Rules for Behavior	100%
Explanations of Events	90%
Locations of Objects	80%
Names of Objects	70%
Stories and Poems	50%

Strategies Used to Help the Child Remember:	% of Mothers Using this Strategy Often or Very Often
Have the Child Look Closely at To-Be-Remembered Objects	90%
Say the Names of To-Be-Remembered Objects	80%
Repeat To-Be-Remembered Information Over and Over	80%
Have the Child Manipulate To-Be-Remembered Objects	70%
Point to Objects or Events To-Be-Remembered	70%
Have the Child Group To-Be-Remembered Objects	50%
Make up Stories about To-Be-Remembered Objects	40%